

WHAT IS CLAIMED IS:

1. A drug delivery composition comprising:
 - a) at least one drug;
 - 5 b) at least one hydrophobic polymer; and
 - c) at least one amphipathic molecule.
2. The composition of claim 1 wherein at least one drug is a hydrophobic drug.
- 10 3. The composition of claims 1 or 2 wherein at least one hydrophobic polymer is selected from the group consisting of: a water insoluble polysaccharide, a polyester, a ethylene vinyl acetate, a poly ether carbonate, a urea based polyurethane, a polyurethane, a silicone rubber, a polytetrafluoroethylene, a nylon polymer, a polyethylene terephthalate, a polyethylene and a polymethylmethacrylate.
- 15 4. The composition of any one of claims 1 to 3 wherein the amphipathic molecule is a polymer.
5. The composition of any one of claims 1 to 4 wherein the amphipathic
20 molecule is a diblock or a triblock.
6. The composition of any one of claims 1 to 5, wherein the amphipathic molecule is a diblock.
7. The composition of any one of claims 1 to 6 wherein at least one amphipathic
25 molecule comprises:

a) at least one of the group consisting of: a polyester, a polyoxypropylene, a poly(lactic acid), a polycaprolactone, a poly anhydride, a poly(lactic-co-glycolic acid) and a water-insoluble polysaccharide; and

b) at least one of the group consisting of: methoxypolyethylene glycol, polyethylene glycol, polyalkylene oxide, and a water soluble polysaccharide.

8. The composition of any one of claims 1 to 7 wherein the composition is selected from at least one of the group consisting of: a film, an amorphous matrix and a microsphere.

9. The composition of any one of claims 1 to 7 wherein the composition is a film.

10. The composition of any one of claims 1 to 7 wherein the composition is a microsphere.

11. The composition of claim 8 wherein the amorphous matrix is selected from at least one of the group consisting of a semi-solid at 37°C, a liquid at 37°C and a solid at 37°C.

12. The composition of any one of claims 1 to 11 wherein the amphipathic molecule comprises from about 5% to about 90% by weight of said composition.

13. The composition of any one of claims 1 to 11 wherein the amphipathic molecule comprises from about 5% to about 40% by weight of said composition.

14. The composition of any one of claims 1 to 13 wherein at least one drug comprises from about 1% to about 30% by weight of said composition.

15. The composition of any one of claims 4 to 14 wherein the amphipathic polymer comprises a hydrophobic monomer:hydrophilic monomer percent by weight ratio of from about 10:90 to about 90:10.

16. The composition of any one of claims 4 to 14 wherein the amphipathic polymer comprises a hydrophobic monomer:hydrophilic monomer percent by weight ratio of from about 30:70 to about 70:30.

17. The composition of any one of claims 4 to 14 wherein the amphipathic polymer comprises a hydrophobic monomer:hydrophilic monomer percent by weight ratio of from about 40:60 to about 60:40.

18. The composition of any one of claims 4 to 14 wherein the amphipathic polymer comprises a hydrophobic monomer:hydrophilic monomer percent by weight ratio of about 70:30.

19. The composition of any one of claims 4 to 14 wherein the amphipathic polymer comprises a hydrophobic monomer:hydrophilic monomer percent by weight ratio of about 80:20.

20. The composition of any one of claims 4 to 14 wherein the amphipathic polymer comprises a hydrophobic monomer:hydrophilic monomer percent by weight ratio of about 60:40.

5 21. The composition of any one of claims 1 to 20 wherein a hydrophobic portion of the amphipathic molecule has a molecular weight that is about the same as the molecular weight of a monomer of the hydrophobic polymer.

10 22. The composition of any one of claims 1 to 20 wherein a hydrophobic portion of the amphipathic molecule has a molecular weight that is smaller than the molecular weight of a monomer of the hydrophobic polymer.

15 23. The composition of any one of claims 1 to 20 wherein a hydrophobic portion of the amphipathic molecule has a molecular weight that is larger than the molecular weight of a monomer of the hydrophobic polymer.

24. The composition of any one of claims 1 to 23 wherein the hydrophobic polymer is selected from the group consisting of: poly(lactic-co-glycolic acid), polyurethane, and polycaprolactone.

20 25. The composition of any one of claims 1 to 24 wherein at least one drug is selected from the group consisting of: amphotericin, anthralin, beclomethasone, betamethasone, camptothecin, curcumin, dexamethasone, genistein, indomethacin, lidocaine, taxol, paclitaxel, tretinoin, fusidic acid, methotrexate and tetracycline.

26. The composition of any one of claims 1 to 25 wherein the amphipathic molecule is selected from the group consisting of: [MePEG]_m[poly(lactic acid)]_n, [PEG]_m[poly(lactic acid)]_n, [MePEG]_m[(lactic-co-glycolic acid)]_n, [PEG]_m[(lactic-co-glycolic acid)]_n, [MePEG]_m[poly(caprolactone)]_n, [PEG]_m[poly(caprolactone)]_n, [MePEG]_m[poly(butyric acid)]_n, [PEG]_m[poly(butyric acid)]_n, [MePEG]_m[poly(anhydride)]_n, [PEG]_m[poly(anhydride)]_n, [MePEG]_m[poly(methacrylate)]_n, [PEG]_m[poly(methacrylate)]_n, [MePEG]_m[poly(acrylic acid)]_n and [PEG]_m[poly(acrylic acid)]_n wherein _m is 1 to 2500 and _n is 1 to 1000.

10

27. A method of preparing a drug delivery composition, the method comprising blending at least one drug, a hydrophobic polymer and an amphipathic molecule.

28. A method of preparing a drug delivery composition, the method comprising:

- 15 a) providing at least one drug;
- b) blending a hydrophobic polymer with at least one drug thereby forming a polymer-drug matrix; and
- c) blending an amphipathic molecule with the polymer-drug matrix.

20

29. The method of claim 27 or 28 wherein blending comprises dissolving the at least one drug, the hydrophobic polymer and the amphipathic molecule in a solvent.

30. The method of claim 29 further comprising evaporating the solvent.

25

31. The method of claim 27 or 28 wherein the blending comprises melting the hydrophobic polymer and mixing the at least one drug, the melted hydrophobic polymer and the amphipathic molecule.

5 32. The method of claim 31 further comprising solidifying the mixed at least one drug, the melted hydrophobic polymer and the amphipathic molecule.

33. A method of preparing a drug delivery composition, the method comprising:

- a) selecting a hydrophobic polymer-drug matrix, the hydrophobic
10 polymer-drug matrix comprising a hydrophobic polymer and at least one drug; and
- b) blending an amphipathic molecule with the hydrophobic
polymer-drug matrix.

34. The method of claim 33 wherein blending comprises dissolving the
15 hydrophobic polymer-drug matrix and the amphipathic molecule in a solvent.

35. The method of claim 34 further comprising evaporating the solvent.

36. The method of claim 33 wherein the blending comprises melting the
20 hydrophobic polymer-drug matrix and mixing the melted hydrophobic polymer-drug matrix and the amphipathic molecule.

37. The method of claim 36 further comprising solidifying the mixed melted hydrophobic polymer-drug matrix and the melted amphipathic molecule.

38. Use of a composition of any one of claims 1 to 26 for treatment of a disease.

39. The use of claim 38 wherein the disease is selected from at least one of the group consisting of: a proliferative disease, an angiogenic disease, an inflammatory disease, and a bacterial disease.

40. Use of a composition according to any one of claims 1 to 26 for application on a medical device.

41. The use of claim 40 wherein the medical device is selected from the group consisting of: a stent, a graft, a cardiovascular device, and a catheter.

42. The use of claim 40 wherein the medical device is a stent.

43. A method of medical treatment comprising administering a composition of any one of claims 1 to 26.

44. The method of claim 43 wherein the treatment is for treatment of a disease selected from at least one of the group consisting of: a proliferative disease, an angiogenic disease, an inflammatory disease, and a bacterial disease.

45. The method of claim 44 wherein the composition is administered as an application on a medical device.

46. The method of claim 45 wherein the medical device is selected from the group consisting of: a stent, a graft, a cardiovascular device, and a catheter.

47. The method of claim 43 wherein the medical device is a stent.

5

48. The method of claim 43 wherein the composition is injected directly into a solid tumor.

49. The method of claim 43 wherein the composition is applied to a tumor

10 resection cavity.

50. The method of claim 43 wherein the tumor resection cavity contains cancer cells.

15 51. The method of claim 43 wherein the composition kills cancer cells.

52. The method of claim 43 wherein the composition is topically applied to tissue of a subject.

20 53. The method of claim 43 wherein the composition prevents post-surgical adhesion.

54. The method of claim 43 wherein the composition is applied perivascularly.

25 55. The method of claim 43 wherein the composition treats restenosis.

56. The method of claim 43 wherein the composition is injected intra-articularly.
57. The method of claim 43 wherein the composition treats arthritis.